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THE RELATION OF INCORRECT AND CORRECT REFRACTION TO SYSTEMIC DISEASES.

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All the theories, conservatisms, and exaggerations as regards the systemic results of eyestrain must give way to the teachings and logic of facts. In its last analysis Medicine is almost entirely empiricism. If the facts are true, if the reports are accurately observed, then they will live and destroy all opposing opinions. Upon clinical demonstration, therefore, must be based the proof or disproof of the theory of the systemic results of eyestrain believed in by so many good physicians. These believers are assured that the chief reason why so many other physicians deny the truth is that the adequately painstaking and skilled diagnosis of errors of refraction has been so generally wanting, and consequently the therapeutic results have not occurred. The doubters, deniers, and flouters have not done good refraction work or they would not doubt, deny, or sneer. They who do the will shall know of the doctrine, holds as well in ophthalmology as in ethics and religion. The reporting of cases cured demonstrates, *per se*, the correct testing, proper prescription, and right adjustment of spectacles. Those who say glasses cannot and do not have such effects confess in that their own bad workmanship. Oddly but necessarily

such deniers with few exceptions are precisely those who are supposed to be the leaders in ophthalmology, the professorial, visiting-surgeon, text-bookmaking, chairmanship-hunting, "authorities." For a few weeks, as patients came to my office who had passed through the hands of these gentlemen, I took note of the glasses worn, and of who prescribed them, and the following are 50 of the examples found:

1. A man of 50, a famous actor, aged 50, had consulted Prof. A. R., the great English authority, to know if his severe objective vertigo, nausea, etc., might be due to his eyes. He was given a prescription for reading purposes only, simple spherical lenses, alike in each eye, and so strong that he could not see print beyond a few inches from his eyes. He at once discarded them, and also English ophthalmology. The patient, under mydriasis showed:—

$$\begin{array}{l} \text{R.} + \text{Cyl. } 0.25 \text{ ax. } 45^{\circ} = 20/20 + \\ \text{L.} + \text{Sph. } 0.25 + \text{Cyl. } 0.37 \text{ ax. } 60^{\circ} = 20/20 + \end{array}$$

Bifocals were ordered, and the giddiness and nausea disappeared.

2. A wellknown physician of New York City recently sent his wife to me. Her family physician had waxed very angry because, by the advice of her husband, she had resolved to come to me. He violently contended nothing was the matter with the eyes, and that her symptoms were all due to systemic disease. He ordered some sort of a liquid to be rubbed on her hand, then to hold the hands in front of the eyes! How the hysterical doctor stupidly diagnoses hysteria when he cannot cure. The woman's eyes had lately been refracted by a prominent oculist of her city and she was wearing, when she arrived, this astonishing correction:—

$$\begin{array}{l} \text{R.} + \text{Sph. } 0.75 \\ \text{L.} + \text{Sph. } 0.75 + \text{Cyl. } 0.25 \text{ ax. } 180^{\circ} \end{array}$$

(*Par nobile fratrum*, this family physician and the oculist!) These glasses were seen by this ophthalmologist four weeks ago, and pronounced by him "exactly right." Previous to this the patient had worn other glasses from a famous professor of ophthalmology in New York City, but without relief. With the last glasses her headaches, etc., have been growing steadily worse, and continuing every day. The pain is worse in the back of the head and neck. Other symptoms exist, such as drowsiness, absent mindedness, bloodshot eyes, etc. This woman's sufferings could at once have been relieved by:—

R. + Cyl. 0.75 ax. 15°

L. + Cyl. 0.25 ax. 105°

Why could she not have been able to secure such spectacles in New York City? There are hundreds of thousands of such patients there.

3. In 1901 a young woman came to me wearing in both eyes + Sph. 0.75 + Cyl. 0.25 ax. 90° , prescribed by an oculist of a distant city. The girl had been compelled to leave school because of headache and failing health, anorexia, etc. I found she had the following errors:—

R. + Sph. 2.50 + Cyl. 0.37 ax. 90°

L. + Sph. 2.00 + Cyl. 0.50 ax. 90°

But I did not give any relief, and was correspondingly appalled, for two years. Then I learned what a blunderer I had been, because she tilted her head persistently to the right, and her true axis of astigmatism in the right eye was 75° . This led me to the knowledge that the girl had spinal curvature. She soon recovered perfect health and a straight back.

4. A young woman wearing glasses prescribed by an oculist (without drops) had great distress of mind because of tachycardia. The heart action often ran as high (sometimes according to the patient higher) as 122 beats a minute, and

irregular. The pulserate at once became normal under:—

$$\begin{aligned} & \text{R.} + \text{Sph. } 0.37 + \text{Cyl. } 0.50 \text{ ax. } 110^\circ \\ & \text{L.} + \text{Sph. } 0.75 + \text{Cyl. } 0.75 \text{ ax. } 80^\circ \end{aligned}$$

For the past year she has had no tachycardia and has enjoyed good health.

5. A western surgeon, 49 years of age, well known as a textbook maker, operator, and teacher, came to me, having "had at least two dozen different glasses from oculist-colleagues." Some of these were as follows:—

1. B. E. + Cyl. 0.75 ax. 90°
2. R. + Sph. 0.25 — Cyl. 1.00 ax. 165°
L. + Sph. 0.25 — Cyl. 0.75 ax. 180°
With Prism each eye, 0.5° . Bases out.
3. R. + Sph. 0.25 — Cyl. 1.50 ax. 165° , 2° Prism B. O.
L. + Sph. 0.25 — Cyl. 0.75 ax. 180° , 2° Prism B. O.
4. R. — Sph. 0.25 + Cyl. 0.62 ax. 90°
L. — Sph. 0.25 + Cyl. 0.62 ax. 90°
With 1.75 + Sph. added in right; 1.00 + Sph. added to left, for near-work.

Now if any one of these lenses had been correct the others were incorrect. The fact that the man's severe eyestrain sufferings had continued for a life time ("boring headaches," "neurasthenia," "stagnation of liver," "dyspepsia," "bloodshot eyes," "as if a nail were being driven in between the eyes." "sick-headaches since ten years of age, with nausea and vomiting") and had not been cured by any glasses, showed that none were correct. His error of refraction is:—

$$\begin{aligned} & \text{R.} + \text{Cyl. } 0.37 \text{ ax. } 45^\circ = 20/20 ? \\ & \text{L.} - \text{Cyl. } 0.37 \text{ ax. } 180^\circ = 20/20 + \\ & \text{With perfect muscular balance and presbyopia } 1.50. \end{aligned}$$

He has "not had a sick-headache since getting glasses I ordered."

6. A woman of 54 came to me in 1905, wearing, both eyes, + Sph. 150, for reading. Noth-

ing was ordered for distance. There has been a life of suffering. Formerly she had "regular sick-headaches, with vomiting." She has been under treatment for liver trouble, or "torpid liver," nausea, feeling of pressure in the epigastrium, weakness of the limbs, etc. The eyes are often "bloodshot," and "watery." I ordered:—

R.—Sph. 0.25—Cyl. 0.50 ax. 90°	} Distance	} Bifocals
L.—Sph. 0.50—Cyl. 1.00 ax. 90°		
R.+Sph. 1.75 and Cyl.	} Near ...	
L.+Sph. 1.50 and Cyl.		

Except slight and occasional indigestion the woman is well. Opera bouffe ophthalmology does not pay—the patient!

7. One of the best known general practitioners of New York City several months ago sent me a woman of 30, wearing, "from a good oculist":—

R. + Sph. 0.25 + Cyl. 1.50 ax. 90°
L. + Cyl. 1.50 ax. 90°

She had been wearing glasses for the last ten years, without relief from excruciating and frequent sick-headaches. Reading a little while or riding in a car brings on the headache, so that being compelled to do both she has headache most of the time. She is compelled to take a nap every afternoon. She has much indigestion, a "burning sensation in the throat," pain in the abdomen simulating appendicitis. She is "frightfully nervous," easily excitable, etc. I ordered:—

R. + Cyl. 1.62 ax. 95°
L. + Cyl. 1.50 ax. 85°

From the general physician who sent the patient to me I have just received a letter in which he says:—"Mrs. S. came to see me a few days ago. All of her troublesome symptoms have disappeared, and she looks and feels splendidly well." In a high degree of astigmatism the location of the axis by as little as 5° is easy, for

the careful oculist, and the failure to get it thus accurately may produce the most wretched misery for the patient. That 5° of error may, indeed, wreck a life.

8. A woman, 36 years of age, came to me in 1904 wearing from a reputable oculist of Delaware, + Sph. 2.50 in each eye. She was suffering from frontal headache, "poor vision," bloodshot eyes, and inability to read, especially in the evening, and constipation. A Colorado oculist had recently testified that her poor vision was due to "an insufficient nerve supply." And this was perhaps true, but if so it was because her errors of refraction and accommodation were not corrected. Upon ordering:

R. + Sph. 3.25 + Cyl. -0.37 ax. 90° } Distance
L. + Sph. 2.75 + Cyl. 0.37 ax. 90° }

R. + Sph. 4.00 and Cyl. } Near
L. + Sph. 3.50 and Cyl. }

her troubles disappeared.

9. A boy, 10 years old, came to me wearing, from a physician in a neighboring city, both eyes, + Sph. 1.00. When no relief came from their use the oculist rightly told the mother he might as well go without them. The mother and boy cannot remember when he did not have headaches. Latterly they have been "regular sick-headaches" with nausea and vomiting about once a week. He often wakes in the morning with headache. The family physician had inherited some antediluvian twist which made him think the fashionable neurologist could or would solve the mystery of the lad's ill-health. There was, therefore, a visit to one of the most famous of the Philadelphian variety. This man, renowned for erudition, had never heard of eyestrain and, poorer in pocketbook, the afflicted parents took the boy back home with the profound advice, "nothing wrong in my line." The error of refraction needing correction was:—

R. + Sph. 0.37 + Cyl. 0.50 ax. 90°
 L. + Sph. 0.75 + Cyl. 0.37 ax. 90°

10. A wellknown oculist of a large Southern city had tried for five years to give a girl of 12 years of age glasses which would bring relief of her symptoms. The patient brought copies of a number of prescriptions ordered during this time. They differ from each other irreconcilably. The last one reads:—

R. + Sph. 2.00 + Cyl. 0.50 ax. 90°
 L. + Sph. 1.25 + Cyl. 0.50 ax. 90°

But the child was actually wearing spectacles passed upon, so the parent and patient said, as follows:—

B. E. + Sph. 0.75 + Cyl. 0.50 ax. 90°

The little woman "has had headache as long as she can remember;" "the pain is of the entire head, but worst in the temples, with nausea, but no vomiting." Since getting the last glasses in August, 1906, the headaches have been most constant and severe. There is car-sickness, anorexia, blurring of print, bloodshot eyes, styes, watering of eyes whenever she reads, subjective color-sensations. Upon trying to find the error of refraction I found that with the left eye the image of the test letters fades out every few seconds—a bad and significant sign of injured sensation-making mechanism. That eye also has only about 20/30 visual acuteness. The real error of refraction is:—

R. + Sph. 2.00 + Cyl. 0.62 ax. 90° = 20/20 +
 L. + Sph. 0.25 + Cyl. 1.25 ax. 80° = 20/30

Because of the failure to bring relief with the absolutely incorrect glasses the oculist naturally ascribed the disease to "the period of adolescence!"

11. A woman of 28 had suffered, when she came to me, from "uterine congestion" for eight years and had been under a gynecologist's constant care during this time. Worse than

this were the severe headaches. An oculist in a neighboring city recently gave her glasses, = R.—Sph. 0.75, L.—Sph. 0.50. But her error is corrigible only by:—

$$\begin{aligned} \text{R.} & - \text{Sph. } 0.62 - \text{Cyl. } 0.25 \text{ ax. } 145^\circ \\ \text{L.} & - \text{Sph. } 0.37 - \text{Cyl. } 0.37 \text{ ax. } 25^\circ \end{aligned}$$

Overcorrection of low degrees of myopia, and noncorrection of low degrees of myopic astigmatism is as common as it is health-wrecking.

12. A man 27 years old, came to me, wearing, both eyes, + Sph. 2.50 + Cyl. 1.25 ax. 90° . These glasses were prescribed recently by a physician, an oculist of established reputation in a neighboring city. The patient had been wearing glasses for ten years from the same man. His symptoms have not been bad or severe, but have prevented him from doing the desired amount of study, reading, etc.; they were "nervousness," poor vision, blepharitis, drowsiness, "heartburn," indigestion, constipation, etc. The static error is:—

$$\begin{aligned} \text{R.} & + \text{Sph. } 3.50 + \text{Cyl. } 1.37 \text{ ax. } 100^\circ = 20/30 \\ \text{L.} & + \text{Sph. } 3.25 + \text{Cyl. } 1.37 \text{ ax. } 85^\circ = 20/30 \end{aligned}$$

With as high a degree of hyperopia as this, the misplacing of the axes of astigmatism by 5° and 10° is inexcusable on the part of the oculist and the patient must suffer because of it.

13. For ten years a patient, a man 25 years old, has worn from a "leading oculist of his city," both eyes,—Cyl. 0.25 ax. 180° . He has had "severe and constant headaches, pain in his eyes," and other symptoms of eyestrain. Why? Because his static error is:—

$$\begin{aligned} \text{R.} & + \text{Sph. } 1.50 + \text{Cyl. } 0.62 \text{ ax. } 90^\circ \\ \text{L.} & + \text{Sph. } 1.50 + \text{Cyl. } 0.50 \text{ ax. } 90^\circ \end{aligned}$$

To characterize such ophthalmology properly would be impossible in parliamentary language. Yet such exhibits occur in every good refractionist's office almost every day. Yet our "leaders" and textbook makers, and professors, make

no move to establish a college or school to deal seriously with the problem.

14. A reputable oculist of New York State, within a month or two, had ordered for a man of 45:—

R. + Sph. 0.50 — Cyl. 2.50 ax. 180°
L. + Sph. 0.75 — Cyl. 2.50 ax. 180°

The man had been suffering from vertigo, nervousness and restlessness, conjunctivitis, etc. The explanation of his nonrelief is found in the facts that the foregoing correction was ordered without the use of a cycloplegic (most necessary at this man's age) and that no reading glasses were ordered. The patient was made happy by:—

R. + Sph. 0.25 — Cyl. 2.12 ax. 180°
L. + Sph. 0.25 — Cyl. 2.12 ax. 15° } Dist. }
R. and L. + Sph. 1.25 and Cylinders } Near } Bifocals

15. A professor in one of our Eastern universities was ordered by the chief ophthalmologist of a German university + Sph. 1.00, each eye. His painful eyes, headaches, etc., persisted, and were only relieved by:—

R. + Sph. 0.75 + Cyl. 0.25 ax. 125° }
L. + Sph. 0.75 + Cyl. 0.25 ax. 105° } Distance

R. + Sph. 1.37 and Cylinders, Reading

16. In 1888 a woman of 47 came to me wearing, from a famous professor of ophthalmology, and his chief assistant (both in collaboration), the following:—

R. — Cyl. 3.00 ax. 20°
L. — Sph. 3.00

I found that with a—Cyl. 6.00 added in the left eye I gave the woman 20/30? vision, and a useful eye she did not know of before.

17. From a Baltimore authority in ophthalmology a young man got an order for + Sph. 0.75, both eyes, although the correct prescription would have been:—

R. + Sph. 0.50 + Cyl. 0.37 ax. 180°
 L. + Sph. 0.75 + Cyl. 0.25 ax. 180°

Ten series of refractions had given no relief of supraorbital headaches and many other symptoms. One was sufficient when it was correct.

18. A patient came to me wearing:—

R. — Sph. 0.37 — Cyl. 0.12 ax. 180°
 L. — Sph. 0.37 — Cyl. 0.50 ax. 10°

He has had much indigestion, was unable to read, especially at night, was wakeful at night, excitable, etc. His need was for:—

R. + Cyl. 0.75 ax. 100°
 L. — Sph. 0.37 + Cyl. 1.50 ax. 100°

Of course he tilted his head persistently to the left, because he wished to see the things he looked at. And of course he had lateral curvature of the spine. But he was 43 years old.

19. A woman of 52 came to me last year complaining of violent "migraine" or sick-headaches existing since childhood. She has also had pain in the forehead, occiput, back of neck, and in the spine. During the life of intense suffering she has had other related symptoms, depression, palpitation of the heart, etc. For this condition her Brooklyn oculist gave her, for near-work, in pulpit spectacles, both eyes, + Sph. 2.00. Mrs. Eddy could have done better! The woman's nervous system and health, and great usefulness as a teacher demanded:—

R. + Sph. 0.12 + Cyl. 0.62 ax. 10°	} Distance	} Bifocals
L. + Sph. 0.25 + Cyl. 0.37 ax. 170°		
R. + Sph. 2.50 and Cyl.	} Near ..	
L. + Sph. 2.62 and Cyl.		

For a peculiar intermediate work + Sph. 1.50 and Cyl., and + Sph. 1.62 and Cyl. were ordered. The former oculist lost his patient, the patient found perfect health, and the second oculist got the unlimited gratitude of the patient whose life of torment had been entirely unnecessary.

20. At the age of 8 a boy had to be taken from school for two years because of chorea, "of the whole body," irritability, etc. Later headaches became troublesome, and dyspepsia. At the age of 15 an ophthalmic surgeon to a dozen hospitals ordered:—

R.—Cyl. 0.50 ax. 180°
L.+Cyl. 0.37 ax. 180°

The right lens was correct but the left should have been—Sph. 0.50—Cyl. 0.25 ax. 180°. The blunder could have been worse only if it had been made in the right eye.

21. A wellknown oculist in Philadelphia ordered for a man of 37, for headaches, both eyes, +Sph. 0.75. His refractive error was:—

R.+Sph. 0.75+Cyl. 0.50 ax. 75°=20/30?
L.+Sph. 0.62+Cyl. 0.37 ax. 105°=20/40+
with exophoria.

Deducting +Sph. 0.37, from this, one sees that the overcorrection of hyperopia and the noncorrection of astigmatism, added insult to injury as regards this man's eyes and nervous system.

22. The "best oculist" in a neighboring city, without having used "drops" ordered a man of 25 for both eyes alike,—Cyl. 0.25 ax. 180°. Headaches, severe and constant, pains in the eyes, drowsiness on reading, etc., were the complaints. The man's error of refraction was:—

R.+Sph. 1.50+Cyl. 0.62 ax. 90°
L.+Sph. 1.50+Cyl. 0.50 ax. 90°

Comment is unnecessary!

23. A visiting surgeon to a famed Eye Hospital told a woman of 34 that she had no astigmatism and ordered:—

R.—Sph. 0.50
L.—Sph. 0.75

She had been confined to sanatoriums and asylums because of ill-health, physical and psychic, characterized chiefly by nervousness and certain delusions. The above glasses ordered

had added to the symptoms "twitching of the eyes." I found the woman had:—

R.—Sph. 0.37—Cyl. 0.37 ax. 105°
 L.—Sph. 0.25—Cyl. 0.50 ax. 60°

This is an error which, in my experience, is as certain as any to upset the nervous system, and even the mental balance. Professors who ignore such errors should be sent to some refraction school—when it is established.

24. For years a little girl's mother had been incessantly trying to get the child to "stop poking her head sideways." She had been "bilious," constipated, and suffered in many ways; she was morbid-minded, irritable, and excessively, even alarmingly, "nervous." There was persistent "batting of her eyes." The New York "Ophthalmic Surgeon" had recently given her, both eyes the same: +Sph. 0.50 +Cyl. 0.75 ax. 90° , and for this piece of scientific work he should have been sued for malpractice. The child's mydriatic error was:

R.+Sph. 0.87+Cyl. 0.25 ax. 75°
 L.+Sph. 0.75+Cyl. 0.37 ax. 75°

The symptoms disappeared, and the child's back is today normally straight and her head held erect.

25. For a dozen years a woman of 28 had been wearing glasses from a physician, a specialist in diseases of the eye. She first consulted him on account of using but one eye, and also for headaches. For seven years she has had severe backache, weakness of the legs, etc. She had sudden "dizzy spells" during which she must lie down. She had great and constant drowsiness. She complained of nervous headaches, "but without pain." (Patients frequently say they have "headaches without any pain in the head," or *vice versa*, that they have "pain in the head without any headaches.") The shame and horror in this case is that the woman's oculist

had compelled her to wear the following murderous lenses:—

R. Plano
L.—Sph. 0.62

I ordered instead these:—

R.+Sph. 0.25+Cyl. 0.25 ax. $60^{\circ}=20/20+$
L.—Sph. 0.12+Cyl. 0.25 ax. $105^{\circ}=20/25$

The woman had been a life-long headtilter. The left eye was fast going out of function.

26. In 1902 the parents of a young woman, 19, for many years a headtilter, afflicted with headaches, sick-headaches, vomiting, etc., were told by her famous Philadelphia "Ophthalmic Surgeon" that she would before long be insane. But just to lessen the danger he prescribed:—

R.+Cyl. 2.50 ax. 90°
L.+Sph. 0.50+Cyl. 2.25 ax. 90°

The ophthalmologist's prognosis for the poor girl was perfectly correct—if she had continued under his care! She consulted another, a non-famous advisor, and he ordered:—

R.+Cyl. 5.00 ax. 100°
L.+Cyl. 4.75 ax. 105°

She has been happy ever since.

27. There is in Philadelphia a great "conservative" much addicted to patient-stealing, surgery, and ordering many "office-visits," who prescribed for a patient, a child of ten years of age, the following:—

R.—Sph. 0.62+Cyl. 3.75 ax. 90°
L.—Sph. 0.50+Cyl. 3.75 ax. 75°

But the lad's total error of refraction was:—

R.+Sph. 0.75+Cyl. 3.25 ax. 90°
L.+Sph. 0.75+Cyl. 3.50 ax. 80°

This child was a constant headtilter, had chorea, headache, disordered stomach, etc. It was fortunate for that child that he escaped "scientific treatment."

28. In 1899, a man of 30, suffering from nau-

sea and headache came to me wearing the following, from an eminent author of ophthalmic textbooks, "Ex-President, etc., etc.," "Visiting Ophthalmologist to the etc., etc."—

Both eyes + Sph. 0.75 + Cyl. 1.00 ax. 90°

But his proper correction was:—

R. + Sph. 0.37 + Cyl. 1.00 ax. 90°

L. + Cyl. 1.75 ax. 90°

The eminent expert should be compelled to take a course in the New Refraction College to be established—when?

29. From the "best oculist in California" a physician, suffering with frontal headaches, sleepiness, etc., was wearing, both eyes,—Cyl. 0.75 ax. 180°. The optical error of this "Member of the Guild" was, both eyes, + Cyl. 0.75 ax. 90°. Even science and skill will make such blunders when a cycloplegic is not used.

30. From one of Pittsburg's most reputable oculists a surgeon, aged 58, was wearing, both eyes, + Sph. 3.00, but was much troubled with subconjunctival hemorrhages. I ordered:

R. + Sph. 2.75 + Cyl. 0.75 ax. 180°

L. + Sph. 3.50 + Cyl. 0.37 ax. 180°

Sph. +2.50 added for near in bifocals

R. Sph. +3.75 and Cyl. } Operating glasses
L. Sph. +4.50 and Cyl. }

The hemorrhages disappeared until two years later differences of refraction and accommodation required changes in the lenses.

31. In 1900, a woman of 45 came to me wearing an atrociously wrong pair of glasses. She had had "St. Vitus Dance," all sorts of headaches, much indigestion, etc. Seven years ago she began having seizures of swooning or unconsciousness with "spasms." Two fingers of the left hand have been paresthetic. The "falling fits" latterly have been recurring every two or three days, unless she takes bromids,

when they are delayed, and occur about once a week. I ordered:—

R.+Sph. 1.12+Cyl. 0.75 ax. 90°, Prism 2° Base up
L.+Sph. 1.25+Cyl. 0.50 ax. 90°, Prism 2° Base down
With Presbyopic correction, in bifocals.

Since the day the glasses were worn there has been but one slight attack of unconsciousness, and the health is good.

32. A man of 38 came to me in 1898 wearing from a great textbookmaker, an ophthalmologist of fame, B. E. + Sph. 1.00. He had had severe frontal headaches, some sick-headaches, and pain between the shoulders. These symptoms disappeared when he began wearing:—

R.+Sph. 1.00+Cyl. 0.37 ax. 165°
L.+Sph. 0.75+Cyl. 0.62 ax. 180°

33. In 1896 a child of 8 was told by a Philadelphia oculist that no error of refraction existed sufficient to cause the frontal headaches, pain in the back of the neck, and anorexia. The symptoms kept on and grew worse. I found:—

R.+Sph. 0.25+Cyl. 0.37 ax. 35°
L.+Sph. 0.37+Cyl. 0.37 ax. 145°

and ordered spectacles to be worn all the time. Since then there have been no headaches, no lack of appetite, no neckache. She demands her glasses, wears them all the time, as their disuse at once brings on headache.

34. In the summer of 1904 a young woman of 23 was sent to a sanatorium with "breakdown" or "collapse." All her life she had gone to bed with headache almost every day. She had chorea as a child, and still had it so far as concerned the facial muscles. When the crises of "congestive headache" come on she is so dizzy she cannot see or walk. Her oculists have never demanded that she should wear their glasses *all* the time so she has not done so much of the time, especially when not using her eyes for near-work. She has been under the care of many physicians, especially that of a great

New York neurologist. She has taken all sorts of drugs, baths, electricity and—the rest! A prominent Philadelphia oculist recently ordered:—

R.+Sph. 1.62+Cyl. 0.75 ax. 110°
L.+Sph. 1.62+Cyl. 1.00 ax. 80°

Her proper correction is:—

R.+Sph. 1.75+Cyl. 0.62 ax. 100°
L.+Sph. 2.00+Cyl. 0.62 ax. 80°

35. A man, 57 years of age, came to me saying “I have been to many oculists but all have refused to give me glasses, or have given me things I could not wear a minute. See if you can help me.” The history was of headaches, dyspepsia, and a life of inability to read or write, a life of out-of-doors, every day and all day. Several of the oldest oculists of the city of —, and of the city of —, and of —, did order spectacles but he could not wear them despite all efforts to do so. One had ordered a plano lens in one eye. Several refused to order glasses at all. Dr. —, of B., five years ago ordered: R.—Sph. 0.50—Cyl. 3.50 ax. 30°, L.—Cyl. 4.00 ax. 30°. The man was a head-tilter, had a long spinal S. curve, etc. I found his refraction errors to be:—

R.—Cyl. 5.00 ax. 20°=20/30?
L.—Cyl. 1.00 ax. 45°=20/30?
+Sph. 2.50 added for near in bifocals •

He has not had a minute of discomfort with these lenses; he immediately regained health. But the most gratifying change is that of his mind, disposition, and actions, which before were morbid, in many distressing ways, but which are now natural and pleasing.

36. These are the last three prescriptions given a man of 53 by the best oculist of his native city in New England:—

R.+Cyl. 2.50 ax 180°
L.+Sph. 2.50+Cyl. 0.50 ax. 135° } Distance
+Sph. 2.00 added for near-work

R.+Sph. 2.00+Cyl. 2.50 ax. 80°
 L.+Sph. 4.50+Cyl. 0.50 ax. 135° } Near

R.+Sph. 1.25+Cyl. 2.25 ax. 80°
 L.+Sph. 3.00+Cyl. 0.50 ax. 30°

The correct diagnosis is:—

R.+Sph. 0.75+Cyl. 1.75 ax. $75^{\circ}=20/30$
 L.+Sph. 1.62+Cyl. 2.25 ax. $145^{\circ}=20/50+$ } Dist.

R.+Sph. 3.00 and Cyl. }
 L.+Sph. 3.50 and Cyl. } Near
 In bifocals

Is it any wonder the man's troubles were not relieved, and that the left eye was half-ruined?

37. In February, 1904, came to me as perfect an example of physical womanhood as I ever saw, 24 years of age, with a history of severe "migraine" or sick-headaches, keeping up at intervals all her life. Excitement, or menstruation, etc., has been likely to bring on the crises. She had also many other of the common symptoms of "migraine." I ordered B. E. + Cyl. 0.62 ax. 90° and the sick-headaches grew worse. I rerefracted but failed again to give her relief. Laboratory diagnoses revealed low hemoglobin, but nothing else wrong. Three years passed without further visits and there was still no relief from the migraine. It looked bad for my theory! But during these three years I had learned something about tilted heads and kinked backs. I now found that three years ago I had failed to notice the tilted head of this woman, and so I had not discovered that her right axis was not 90° but was 105° .

38. A man of 56 had suffered from indigestion, flatulence, and constipation since early childhood. Fifteen years ago he had a "general breakdown," "nervous prostration," etc., attributed to "overwork." A few years ago headaches came on, heaviness of eyes, distress in head, etc. Later vomiting, great numbness of the arms, dizziness, and nausea, and great

insomnia. He came to me wearing, from one of Philadelphia's prominent oculists:—

R.+Sph. 0.62+Cyl. 0.50 ax. 90°

L.+Sph. 0.37+Cyl. 0.75 ax. 60°

With 2.75 added for near-work.

Now a man of 54 (he was 54 when they were ordered) does not normally have a presbyopic failure of 2.75, and this man did not. He was thus compelled to hold his book within eight inches of his eyes—a source of eyestrain, *per se*. But even at 56 his proper correction was:—

R.+Sph. 0.50+Cyl. 0.37 ax. 120°

L.+Sph. 0.37+Cyl. 0.37 ax. 90°

With +Sph. 2.25 added for near-work, in bifocals.

There is no cure of eyestrain without the absolutely correct location of the axes of astigmatism.

39. From one of Newark, New Jersey's foremost oculists a patient of 67 years of age came to me wearing, B. E., +Sph. 1.25 for distance, and for near +Sph. 3.25. She has worn such glasses as these for 23 years, but for 50 or more years she has been almost a constant sufferer from chronic constipation, severe and almost uninterrupted headache, pain in the eyes, sleeplessness, etc. Can any but "conservative" ophthalmologists, and typical neurologists dream that this woman's half-century of suffering has been useless, has been due, at least in the last 25 years, to ophthalmologic crime, to the lack of correction of this error of refraction:—

R.+Sph. 0.75+Cyl. 1.12 ax. 180°

L.+Sph. 0.62+Cyl. 1.00 ax. 180°

with proper presbyopic correction in bifocal spectacles?

40. In October, 1905, a woman of 45 came to me complaining of nausea without apparent cause, frontal headache, car-sickness, "stomach trouble," insomnia, "nervousness," cardiac palpitation, etc. She had taken nitroglycerin for two years. For some of these things, grow-

ing worse, she had worn glasses for 21 years, from a number of oculists, the last prescription being:—

R.—Sph. 4.00—Cyl. 2.00 ax. 120°

L.—Sph. 2.50—Cyl. 0.25 ax. 180°

Exophoria 4°

This correction was not far wrong, but no reading glasses were ordered, and especially no bifocals. I ordered:—

R.—Sph. 4.12—Cyl. 2.25 ax. 110°	} Dist.	} Bifocals
L.—Sph. 1.87—Cyl. 0.25 ax. 180°		
R.—Sph. 3.00 and Cyl.	} Near	
L.—Sph. 0.75 and Cyl.		

In a month the woman was “getting fat,” and later she was (and continues to be) “practically well.”

41. A woman of 38 came to me three years ago wearing:—

B. E.—Sph. 0.12+Cyl. 0.62 ax. 90°

from one of Philadelphia’s prominent oculists. She had recently begun having severe attacks of “migraine,” being kept in bed by them two days, with vomiting. She has had intestinal indigestion “all her life.” I found:—

R.+Sph. 0.12+Cyl. 0.75 ax. 90°=20/20+

L.+Sph. 0.12+Cyl. 0.75 ax. 75°=20/20+

Exophoria 4°, Abduction 8°, Adduction 9°

Simple cylinders were ordered, and the adduction increased by gymnastic exercises to 80°, with slight esophoria. All symptoms disappeared in a couple of months, there was a gain in weight, and there has since been perfect health.

42. “I can’t eat anything, I have such a sick stomach, and I have doctored until I am tired; no glasses have done any good.” Thus said a patient, 25 years old, in 1896. I could not get a copy of other prescriptions. I ordered:—

R.—Sph. 0.50+Cyl. 1.50 ax. 90°

L.+Cyl. 1.00 ax. 90°

There was immediate cure—all symptoms vanishing at once. Slight symptoms recurred when glasses needed changing, to disappear when the change was made. At the last visit, in 1907, the error was, both eyes $+ \text{Cyl. } 2.00$ ax. 90° .

43. A woman, 39 years of age, had vertical and occipital headache for years, worsened by use of eyes at near-range, occasional sick-headaches with both nausea and vomiting, indigestion, neuralgia, melancholy, etc. She had recently been ordered by her oculist:—

R. $+ \text{Sph. } 0.25 - \text{Cyl. } 0.62$ ax. 180°
L. $- \text{Cyl. } 0.50$ ax. 180°

I ordered this:—

R. $- \text{Sph. } 0.12 + \text{Cyl. } 0.62$ ax. 105°
L. $- \text{Sph. } 0.25 + \text{Cyl. } 0.50$ ax. 90°

There was so much improvement in all the symptoms that it might almost be pronounced a cure. As this was not completely satisfactory to me, I asked her to return, and I found at this time what I should have found at the first visit, a slight lumbar left curve of the spine, with resultant facts and symptoms.

44. For many years a woman of one of the New England States had been an invalid, surrounded by nurses, and by physicians. To describe the symptoms and long history of illness would take too much space. She had recently been ordered by one oculist:—

R. $+ \text{Cyl. } 0.25$ ax. 180°
L. $+ \text{Cyl. } 0.50$ ax. 90°

and by another:—

R. $+ \text{Sph. } 0.25 + \text{Cyl. } 0.25$ ax. 45°
L. $+ \text{Sph. } 0.25 - \text{Cyl. } 0.25$ ax. 135°

She had, however, the worst sort of ametropia, a low degree of simple myopic astigmatism. I ordered:—

R. $- \text{Cyl. } 0.25$ ax. 150° } Distance
L. $- \text{Cyl. } 0.25$ ax. 30° }
B. E. $+ \text{Sph. } 0.50$ added } Near

In a month her husband wrote me she "began to improve at once" after getting glasses; "progress is steady and rapid." "When she takes her glasses off she has flashes of light." In six months the progress toward health was still gratifying.

45. A famed "ophthalmic surgeon" of New York City last year ordered a woman of 31 to wear:—

B. E.—Cyl. 2.50 ax. 180°

The woman had great suffering of many kinds, and because of troubles in her own family, with supposed inheritance of insanity, etc., was so profoundly depressed that she was frequently on the verge of committing suicide. The gynecologists had done what they could (most of the women who reach the gynecologic operating table have been lifelong sufferers from eyestrain), the nerve men have done what they couldn't, and two tenotomomaniacs demanded permission to cut her ocular muscles. There was, however, need for:—

R.+Sph. 0.25—Cyl. 3.00 ax. 180° } Distance
L.+Sph. 0.25—Cyl. 3.00 ax. 180° }

R.+Sph. 0.87 and Cyl. } Near
L.+Sph. 0.75 and Cyl. }

Her muscles were to be advanced or tenotomized for one degree of exophoria! How many crimes are committed in the name of medical science!

46. A boy of 11 had chorea, headache, blepharitis, and great "nervousness." His local oculist in a neighboring State ordered:—

R.+Sph. 2.00
L.+Sph. 2.50+Cyl. 0.25 ax. 90°

I ordered the following:—

R.+Sph. 1.50+Cyl. 1.62 ax. 90°
L.+Sph. 2.00+Cyl. 1.00 ax. 90°

The chorea had extended to constant spasmodic motions of the right arm and leg. In addition

there was stammering, a halting and then explosive method of speaking. All these things disappeared gradually after wearing the last glasses and for the last three or four years have not existed.

47. For a girl 10 years of age, an oculist of Leipzig, Germany, prescribed, according to Continental wisdom, both eyes, +Sph. 1.00, and an American, B. E. +Cyl. 0.25 ax. 90°. The child was constipated, had "bilious attacks" with vomiting, coated tongue, fickle appetite, headaches, etc. As no relief came from the glasses the American ordered their use discontinued. Then to former troubles, temporary strabismus was added, with diplopia. The following in spectacles cured the child of every complaint:—

B. E. +Sph. 0.37 +Cyl. 0.37 ax. 90°

48. An ophthalmic surgeon of international reputation in New York City ordered a woman of 24:—

R. +Cyl. 0.25 ax. 90°, Prism 1.5° Base in
L. +Cyl. 0.25 ax. 90°, Prism 1.5° Base in

The woman's symptoms were frequent headaches, with nausea, since childhood, and great insomnia, extreme nervousness and restlessness. It has been well said that "Happiness is made up of little things, but itself is not a little thing." It could aptly be said of eyestrain. I ordered for the much and long suffering woman:—

R. +Cyl. 0.37 ax. 90°
L. +Cyl. 0.25 ax. 105°

Her letters since express "gratitude for the perfect comfort she has had, although using her eyes more than for several years." A famous orthopedic surgeon discovered spinal curvature soon after she first came to me, and ordered a thick-soled shoe. It hurt her so (pain in the the back) that she took it off and successfully

took up gymnastic exercises instead. She suffers, however, if her glasses get crooked, or if she leaves them off.

49. A Philadelphia oculist ordered, in 1899, for a man of 28 the following:—

R. +Sph. 2.25 +Cyl. 1.00 ax. 180° } Distance
L. +Sph. 2.25 +Cyl. 1.00 ax. 90° }

R. Prism 1.5° Base in } Fronts
L. Prism 2.0° Base in }

The man had pain in eyes, frontal headaches, daytime sleepiness, indigestion, and “nervousness.” He had been wearing glasses for 14 years. I at once ordered:—

R. +Sph. 2.00 +Cyl. 1.25 ax. 15°
L. +Sph. 2.00 +Cyl. 1.12 ax. 80°

For his esophoria of 18°, and hyperphoria of 3° I did nothing beyond advising the man for awhile not to visit New York. He has had none of the old symptoms since wearing the glasses I ordered. He still has an esophoria of ten or twelve degrees. There is no hyperphoria. I long ago gave him permission to go to New York if he wished to do so. I have another patient with 22° of esophoria, a student and great reader, who is likewise without a symptom.

50. “Deficiency of hydrochloric acid” is often due to eyestrain. This was proved to be true in Mrs. H.’s case, a woman of 33, who consulted me first in 1895. There was also severe indigestion, pain in stomach, inability to read five minutes without bringing on this pain, etc. Sometimes it has been called nervous dyspepsia. The most troublesome of all her symptoms however was a dermatitis, “an eruption,” especially of the face, so great as to require “lancing” by a dermatologist of her city. She had been treated in vain for this affection for six months. A general physician who had exceptional observing powers finally told her, despite her glasses from a reputable oph-

thalmologist, that her skin-trouble was due to her eyestrain. Within two weeks after I had ordered a change of glasses the diseases both of the stomach and skin disappeared. Both returned eight years later when she had neglected to have her glasses changed as I had advised. With new glasses they promptly disappeared once more. The last prescription was:—

R.+Sph. 1.87+Cyl. 0.25 ax. 45°	} Distance	} Bifocals
L.+Sph. 2.12+Cyl. 0.25 ax. 135°		
R.+Sph. 3.00 and Cyl.....	} Near ...	
L.+Sph. 3.25 and Cyl.....		

Dermatologists are vainly treating many patients which the refractionist could speedily cure.